CLAIMS

1. A method for scale manufacturing a series of shoe shapes distributed on a series of footwear sizes starting from a base shoe shape (2) provided in a basic footwear size, comprising the following steps:

- gathering the spatial coordinates (x_B, y_B, z_B) of points on the base shoe shape (2) of basic size using gauges (15) associated with a first computer means (10) on which CAD programs are run, or obtaining said spatial coordinates (x_B, y_B, z_B) from a storage unit (8);

- obtaining, from the spatial coordinates (x_B, y_B, z_B) of points on the base shoe shape (2) of basic size, the spatial coordinates (x_n, y_n, z_n) of points on at least another shoe shape in the series, by using said computer means (10) provided with predetermined calculation formulae;

- feeding an NC tool machine with said spatial coordinates (x_n, y_n, z_n) of points on said at least another shoe shape in the series for the manufacture thereof;

- characterized in that said computer means (10) equipped with CAD programs is used for defining the profile, the volume, or the spatial coordinates of footwear component parts associated with said another shoe shape in the series;

and that said coefficients (c_x, c_y, c_z) are functions of an integer (n) denoting the positive or negative distance of a given size in the range with respect to the basic size, according to the following formulae:

$Cx = 1 + f(n)$

$Cy = 1 + f(n) - f(n \bullet |n|)$

$Cz = 1 + f(n) - f(n \bullet |n|)$

where, $|n|$ is the absolute value of n.

2. Method according to Claim 1, characterized in that said functions

of said integer (n) are multiplication functions by predetermined numerical parameters (a, b, c, d, e), as per the following relations:

$Cx = 1 + n \bullet a$

$Cy = 1 + n \bullet b - n \bullet |n| \bullet c$

$Cz = 1 + n \bullet d - n \bullet |n| \bullet e$

3. Method according to Claim 2, characterized in that the parameter (a) of constant length variation along the X axis varies within the range of $(3.5 \div 1.5) \bullet 10^{-2}$.

4. Method according to Claim 2, characterized in that the parameter (b) of first-degree width variation along the Y axis varies within the range of $(3.5 \div 2.0) \bullet 10^{-2}$.

5. Method according to Claim 2, characterized in that the parameter (d) of first-degree thickness variation along the Z axis varies within the range of $(3.0 \div 1.0) \bullet 10^{-2}$.

6. Method according to Claim 2, characterized in that the parameter (c) of second-degree width variation along the Y axis varies within the range of $(4.0 \div 7.0) \bullet 10^{-4}$.

7. Method according to Claim 2, characterized in that the parameter (e) of second-degree thickness variation along the Z axis varies within the range of $(4.0 \div 7.0) \bullet 10^{-4}$.

8. Method according to Claim 2, characterized in that the values of said parameters (a, b, c, d, e) are increased to develop shoe shapes for child sizes from those for developing lady/gentleman shoe shapes.

9. Method according to Claim 2, characterized in that said second-degree variation parameters (c, e) along the Z axis may have the same value.

10. Method according to Claim 1, characterized in that said range of footwear sizes spreads over constant-rate length variations (X axis), and

over width (Y axis) and thickness (Z axis) variations that are related to said length variation.

11. Method according to Claim 10, characterized in that said constant rate is equal to 0.5 cm.

12. Method according to Claim 10, characterized in that a size in said range of footwear sizes describes the foot plantar surface as developed in the distal direction, i.e. in the length direction or X axis.

13. Method according to Claim 1, characterized in that the footwear sizes are spread over length variations that are based on the decimal metric system.

14. Method according to Claim 1, characterized in that a comfort rating mark, obtained from said computer means (10) as a sum, that is weighed and standardized in respect of the measurement units, of a group of numerical values characterizing a given shoe shape, is associated with each shoe shape in the series.

15. Method according to Claim 14, characterized in that said numerical values include at least the volume available for the foot, the "fit", and the softness of the materials out of which the shoe is made.

16. Method according to Claim 15, characterized in that the fit is the smallest section through which the tarsus and the metatarsus must be passed in order to put on the shoe, as calculated in a parallel plane to a diagonal line (D) from the end (H) of the contour line on the top pad to the foremost point (K) of the top flat of the shoe shape (1).

17. Method according to Claim 1, characterized in that said footwear component parts are at least the insole, the sole, the quarter, and the heel.

18. Method according to Claim 1, characterized in that the data about the spatial coordinates (x_n, y_n, z_n) of points of all the sizes in the range, as well as about said component parts associated with each shoe shape, is contained in a storage unit (8) associated with said computer means

(10).

19. Method according to Claim 18, characterized in that said storage unit (8) contains a database.

20. Method according to Claim 18, characterized in that a part of the data is contained in an integrated circuit (30) placed in the shoe shape (1).

21. Method according to Claim 1, characterized in that said component parts are realized by feeding tool machines with data about the profile, the volume, or the spatial coordinates of said footwear component parts.

22. Method according to Claim 1, characterized in that said tool machine incorporates and is driven by an on-board computer means corresponding to said computer means (10).

23. Method according to Claim 16, characterized in that said storage unit is a read/write memory or a read-only memory.

24. Method according to Claim 1, characterized in that said calculation formulae link the spatial coordinates (x_n, y_n, z_n) of points on said at least another shoe shape in the series to the spatial coordinates (x_B, y_B, z_B) of points on the base shoe shape (2) by a relation of proportionality of predetermined coefficients (c_x, c_y, c_z).

25. Method according to Claim 1, further comprising the steps of:

- obtaining from said spatial co-ordinates (x_B, y_B, z_B) of the base shoe shape (2) the spatial co-ordinates (x_n, y_n, z_n) of points of some shoe components corresponding to said at least another shoe shape in the range;

- feeding an NC tool machine with the spatial co-ordinates of said shoe components (8,11,12), for manufacturing respective moulds of said components;

- molding the respective components.

26. A shoe shape of a predetermined footwear size for manufacturing footwear in very large scales by automatic assembly machines, characterized in that it incorporates an integrated electronic circuit (30) containing data about the spatial coordinates (x_n, y_n, z_n) of points on the shoe shapes of said predetermined size in the series, and about footwear component parts associated with said shoe shape.

27. Shoe shape according to Claim 26, characterized in that said integrated circuit (30) is received in a suitably provided socket (31) on the flat top surface of said shoe shape (1).

28. Shoe shape according to Claim 26, characterized in that said integrated circuit (30) is either a read-only memory or a read/write memory.

29. Shoe shape according to Claim 26, characterized in that data and information about the records of the shoe shape manufacturer where the shoe shape shoe design (1) has been made, an identification code, and CAM instructions describing the path of the contour line relative to a position reference, are stored in said electronic circuit (30).

30. Shoe shape according to Claim 26, characterized in that the data contained in said electronic circuit (30) is read contact-less by radio or magnetic transmission.